

# CA | Energy Efficiency Strategic Plan

## Zero Net Energy

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California Public Utilities Commission



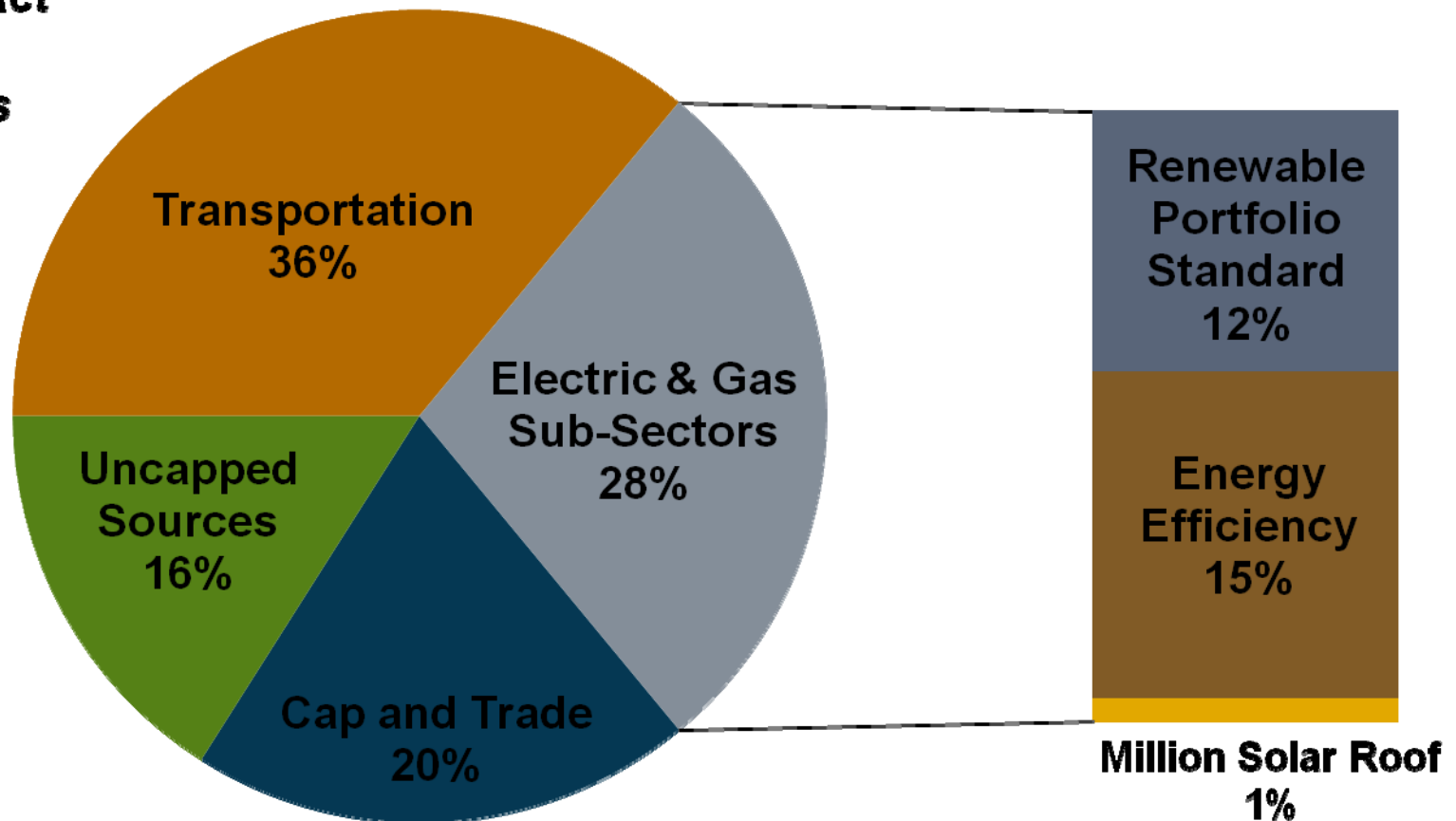
- The Strategic Plan
- ZNE Action Plan
- ZNE & Plug Loads
- Q&A

# CA | Energy Efficiency Strategic Plan

## THE STRATEGIC PLAN

# The Strategic Plan: AB 32

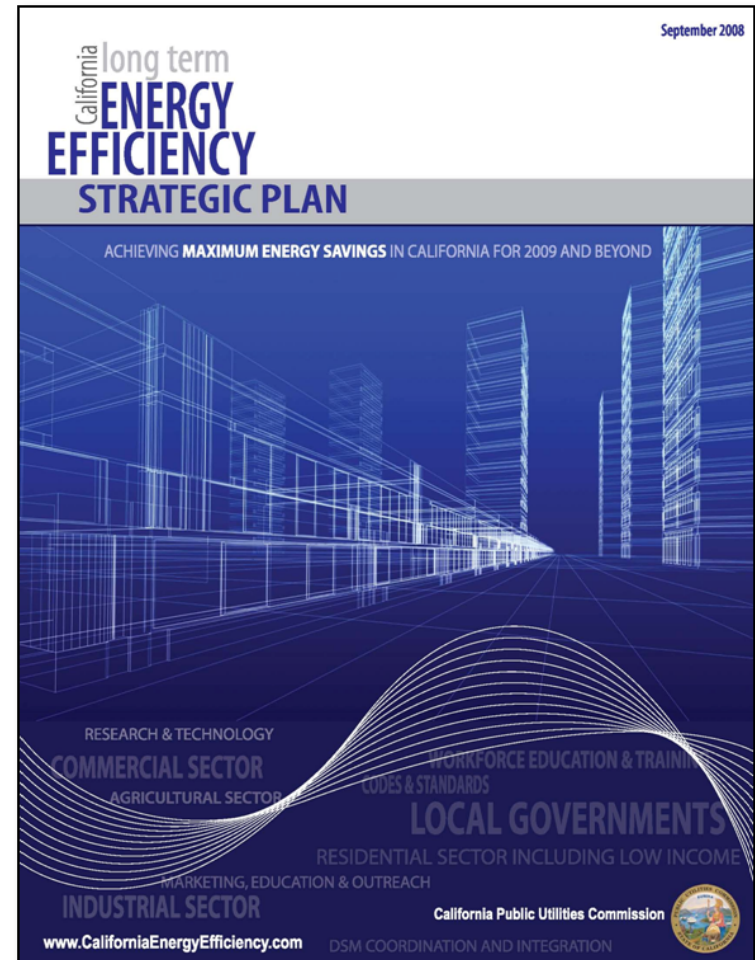
**California's  
Global Warming  
Solutions Act  
Mandates  
1990 Levels  
by 2020**



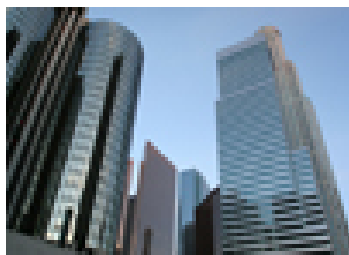
*California Air Resources Board Scoping Plan, December 2008, Table 2.*

# Strategic Plan: Objective

Market transformation is long-lasting, **sustainable changes** in the structure or functioning of a market achieved by **reducing barriers** to the adoption of energy efficiency measures to the point where continuation of the same **publicly-funded intervention** is **no longer appropriate** in that specific market.

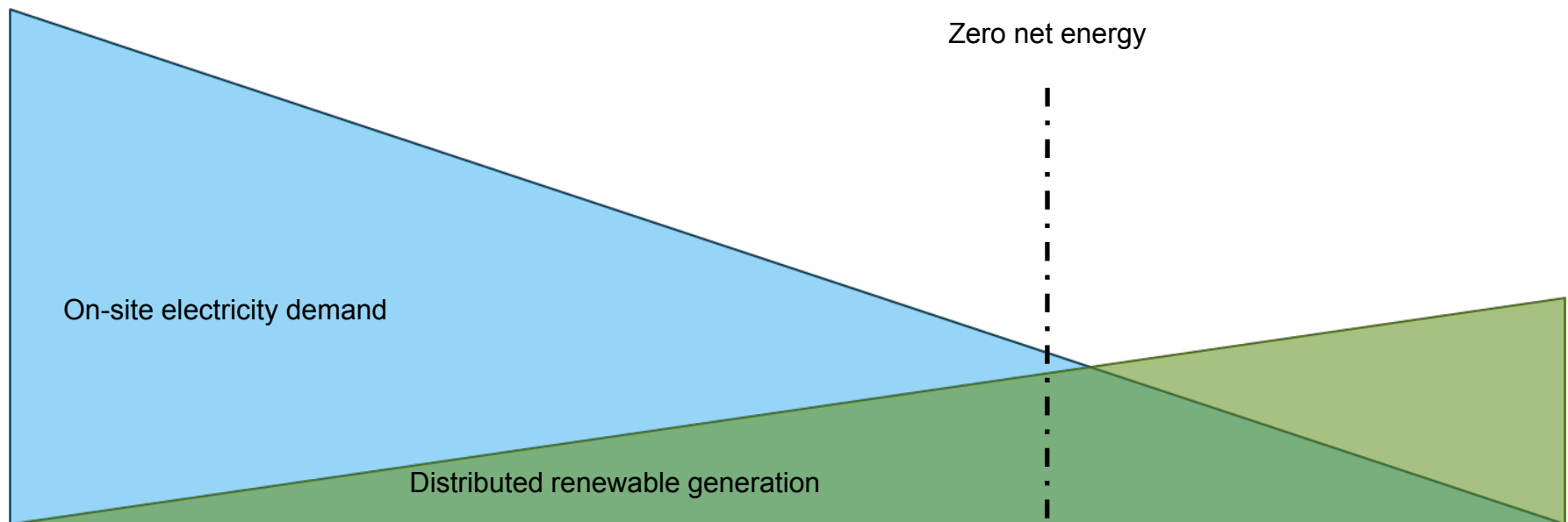


# Strategic Plan: Big Bold Goals



- All new residential construction in California will be zero net energy by 2020
- All new commercial construction in California will be zero net energy by 2030
- Heating, Ventilation and Air Conditioning (HVAC) will be transformed to ensure that its energy performance is optimal for California's climate
- All eligible low-income customers will be given the opportunity to participate in the low income energy efficiency program by 2020.

## WHAT IS ZERO NET ENERGY?



- The amount of energy provided by on-site renewable energy sources is equal to the amount of energy used by the building.

## **All Economic Sectors**

- Residential, including Low Income
- Commercial
- Industrial
- Agricultural

## **Cross-Cutting Areas**

- Codes & Standards
- DSM Coordination & Integration
- Workforce Education & Training
- Marketing & Outreach
- Research & Technology
- Local Governments
- Heating, Ventilation  
& Air Conditioning
- Lighting



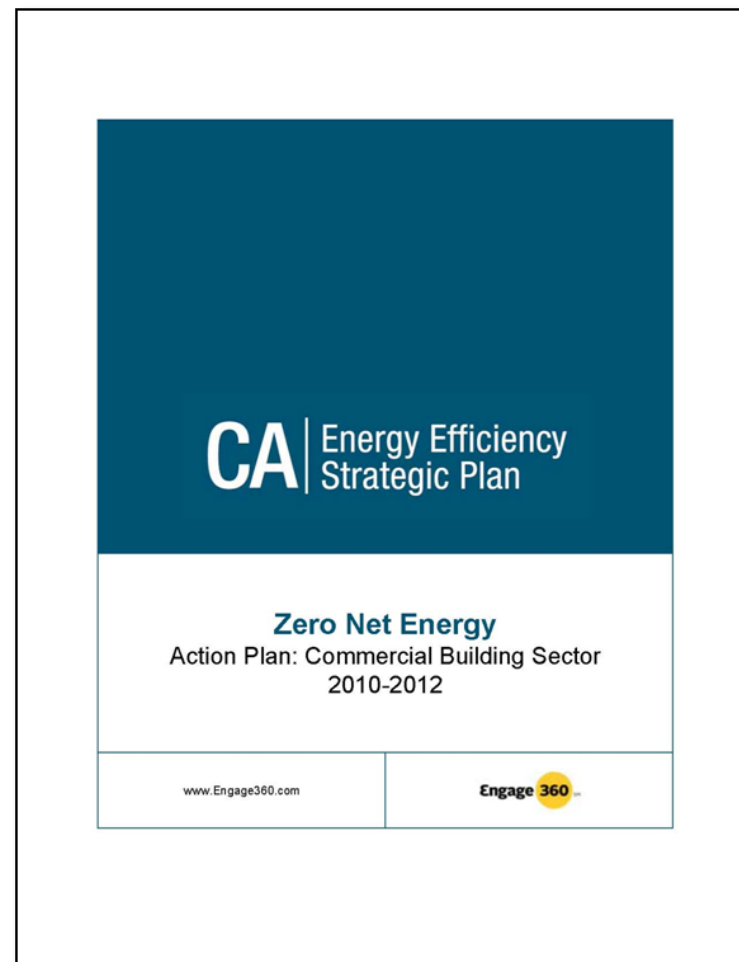
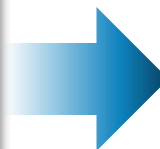
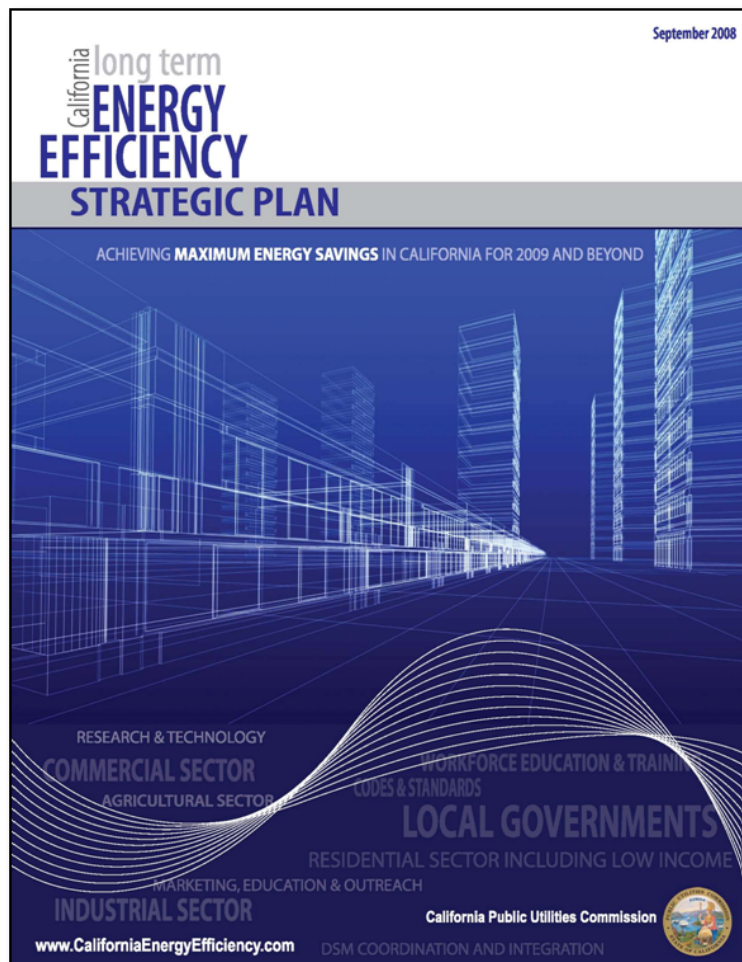
# Strategic Plan: Milestones

ZNE Commercial Buildings				
Strategies	Near Term 2010 – 2012	Mid Term 2013 – 2015	Long Term 2016 – 2020	2021 – 2030
Establish a long-term progressive path of higher minimum codes and standards.	Establish one- or two-tiered voluntary EE building standards.	Adjust the code on a triennial schedule on a fixed trajectory to ZNE by 2030.	RD&D and Title 24 updates	RD&D and Title 24 updates
Broaden Title 24 to address as many energy end uses as possible.	Adopt broader codes and standards to include plug loads and whole building approaches including metering and data management; automated diagnostic systems; and sub-metering for tenant-occupied space.	Develop and adopt progressively broader and deeper codes and standards.	Develop and adopt progressively broader and deeper codes and standards.	Develop and adopt progressively broader and deeper codes and standards.
Establish a “Path to Zero” Campaign to create demand for high-efficiency buildings.	Convene leading building industry associations to plan and conduct campaign.	Conduct Campaign	Conduct Campaign	Conduct Campaign
Develop innovative financing tools for ZNE and ultra-low energy <i>new</i> buildings.	Develop and pilot innovative financing tools.	Implement most effective funding mechanisms.	Expand Implementation of funding mechanisms.	On-going expansion of these options.

# CA | Energy Efficiency Strategic Plan

## ZNE Action Plan

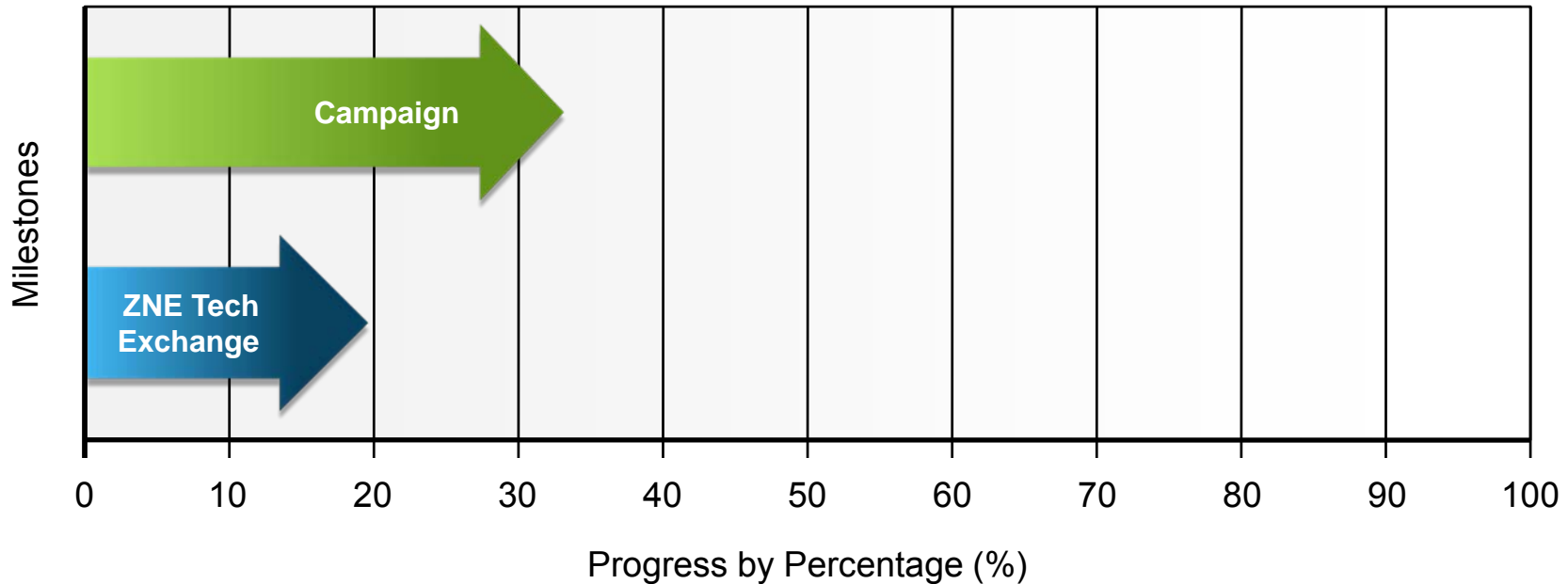
# Action Plans



- 1-3: Establish a “Path to Zero” Campaign To Create Demand for High-Efficiency buildings

Milestone	Champions	Key Actions	Timeline
<b>1-3-1</b> Convene leading building industry associations to plan and conduct campaign	Keri Bolding, Resource Media  Shilpa Sankaran, ZETA Communities	Convene series of stakeholder workshops	Ongoing
		Identify ZNE key audiences, drivers, attitudes segments	Complete
		Develop ZNE baseline study in key ZNE segments	Q3 2010
		Develop outreach and education campaign plan (plus funding opportunities)	Q3 2010
		Launch ZNE outreach and education campaign	Q1 2011
		Track and report on progress	Q3 2011

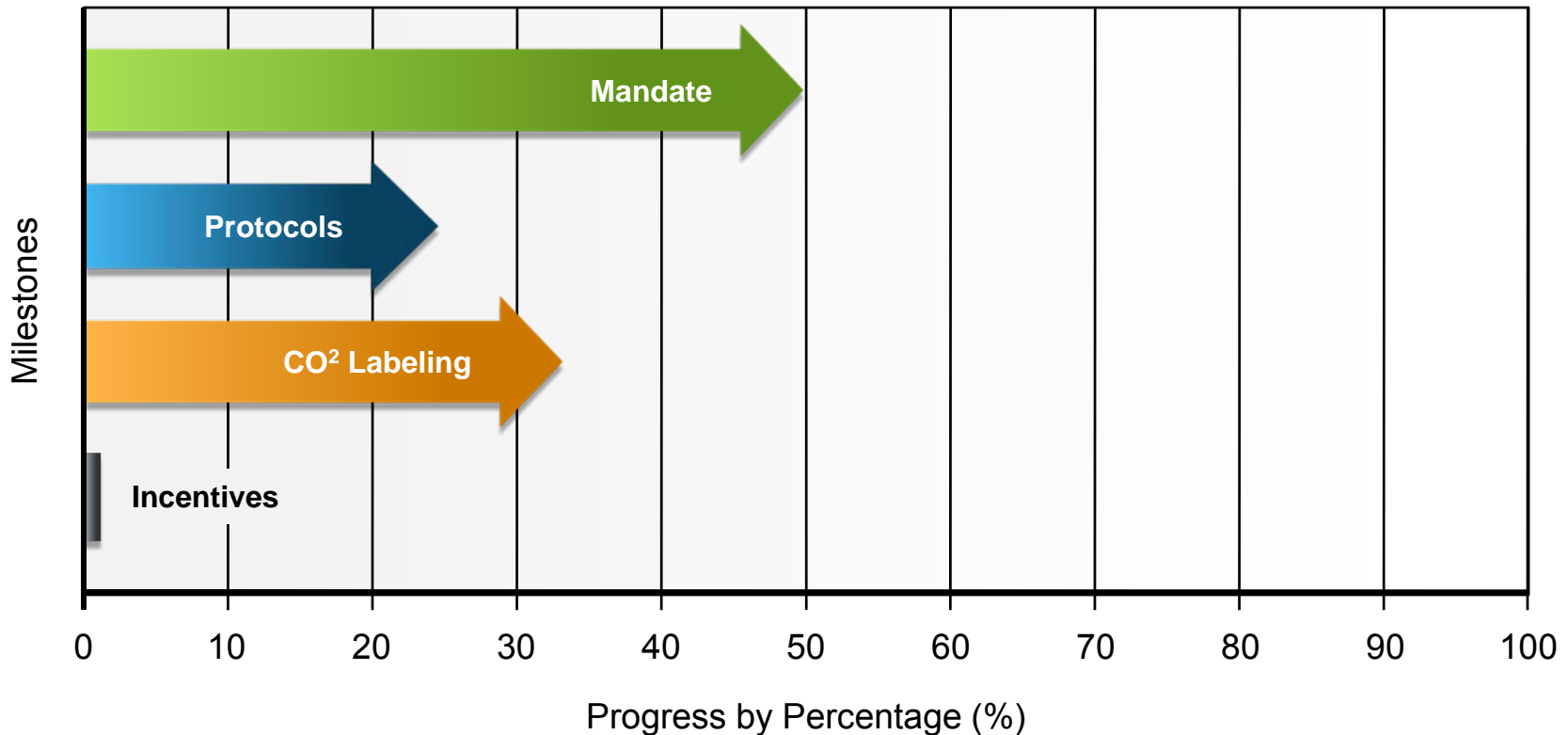
- 1-3 Establish a “Path to Zero” Campaign To Create Demand for High-Efficiency buildings



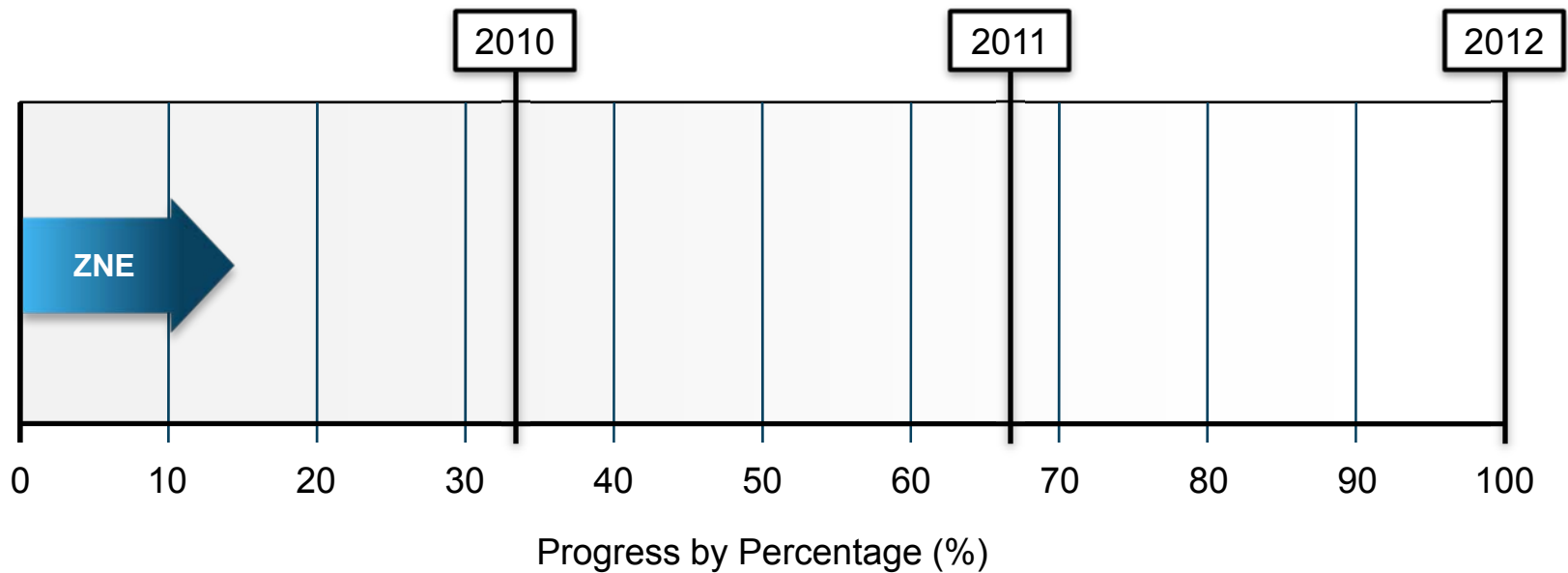
- Strategy 2-4: Establish Mandatory Energy and Carbon Labeling Benchmarks

Milestone	Champions	Key Actions	Timeline
<b>2-4-1</b> Mandate benchmarking for all commercial buildings, triggered by changes in building ownership, financing or tenancy	Amy Barr, Heschong Mahone Group	Mandate commercial benchmarking at time of sale and lease	Complete
	Barry Hooper, San Francisco Department of Environment	Implement the statute through AB 1103 rulemaking	Q4 2010

- Strategy 2-4: Establish Mandatory Energy and Carbon Labeling Benchmarks



# Action Plans





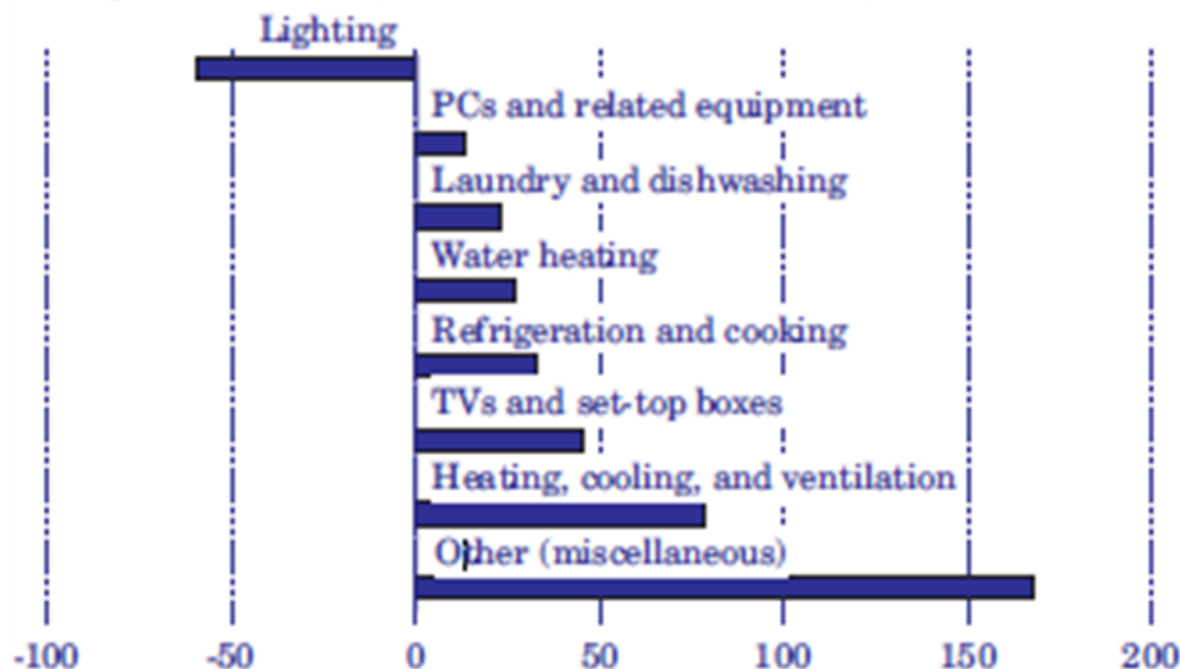
# CA | Energy Efficiency Strategic Plan

## ZNE & PLUG LOADS

- Plug loads do not fall into other traditional end-use categories (appliances, lighting, HVAC, etc.)
- Residential or Commercial
- Annual energy use estimates vary: ~15 to 20% of residential and ~10 to 15% of commercial electricity use
- 3 to 4 billion individual devices accounting for about 10% of total U.S. electricity use

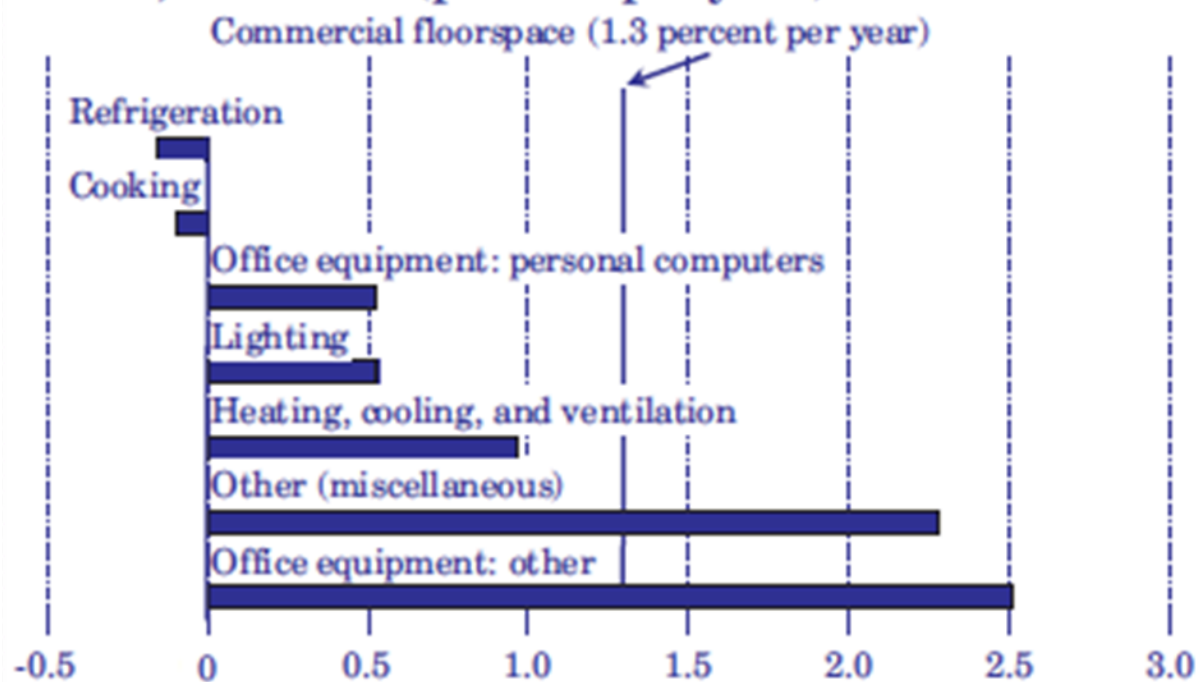
## Miscellaneous uses dominate growth in electricity demand

Figure 43. Change in residential electricity consumption for selected end uses in the Reference case, 2008-2035 (billion kilowatthours)

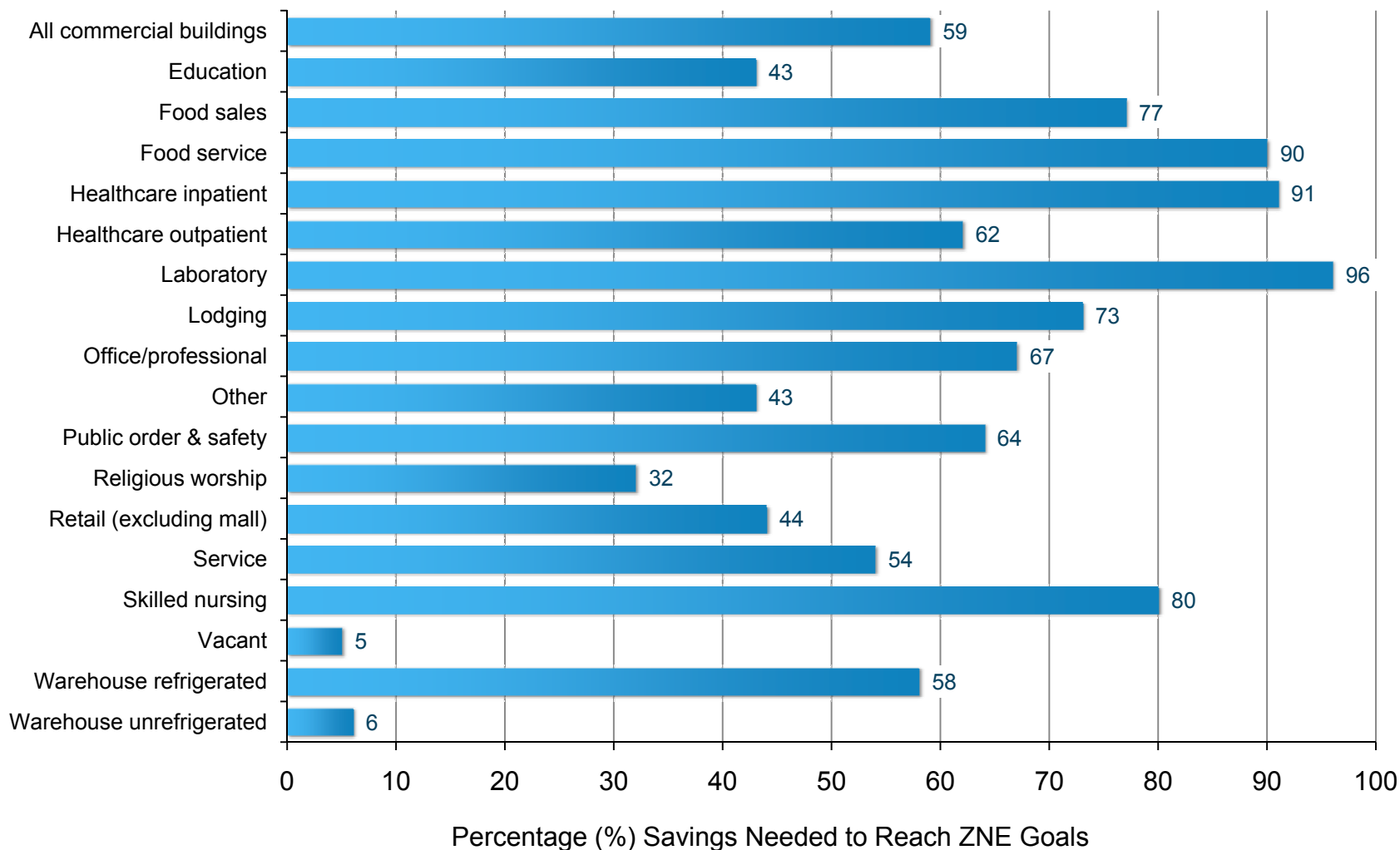


## Electricity leads expected growth in commercial energy use

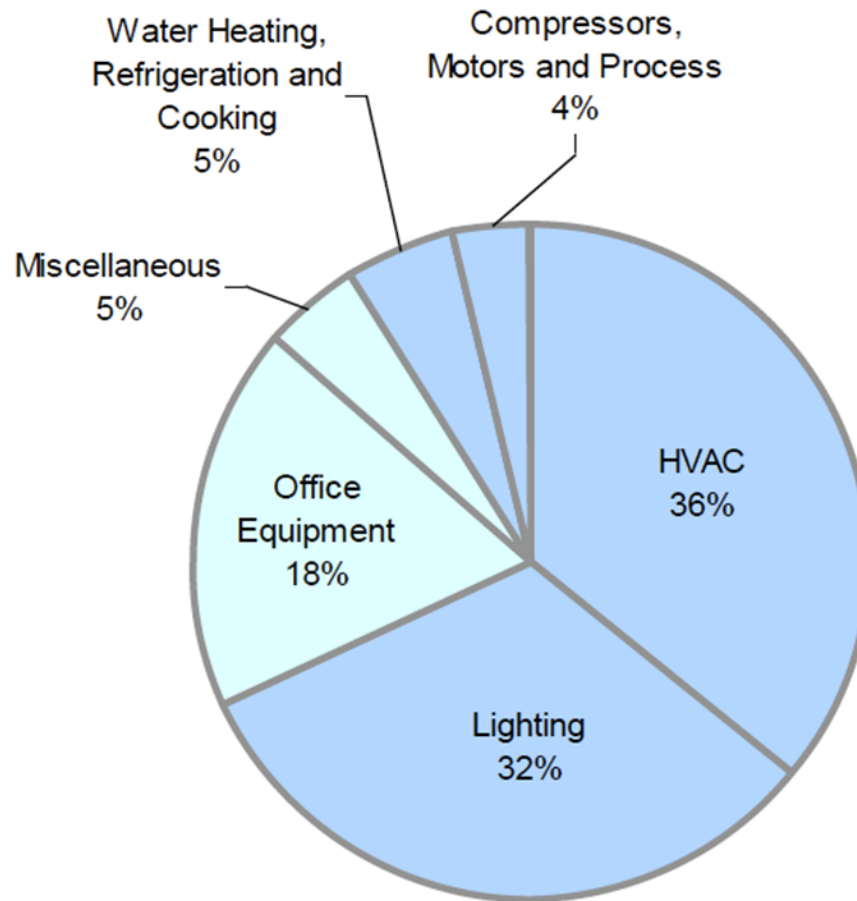
Figure 47. Average annual growth rates for selected electricity end uses in the commercial sector, 2008-2035 (percent per year)



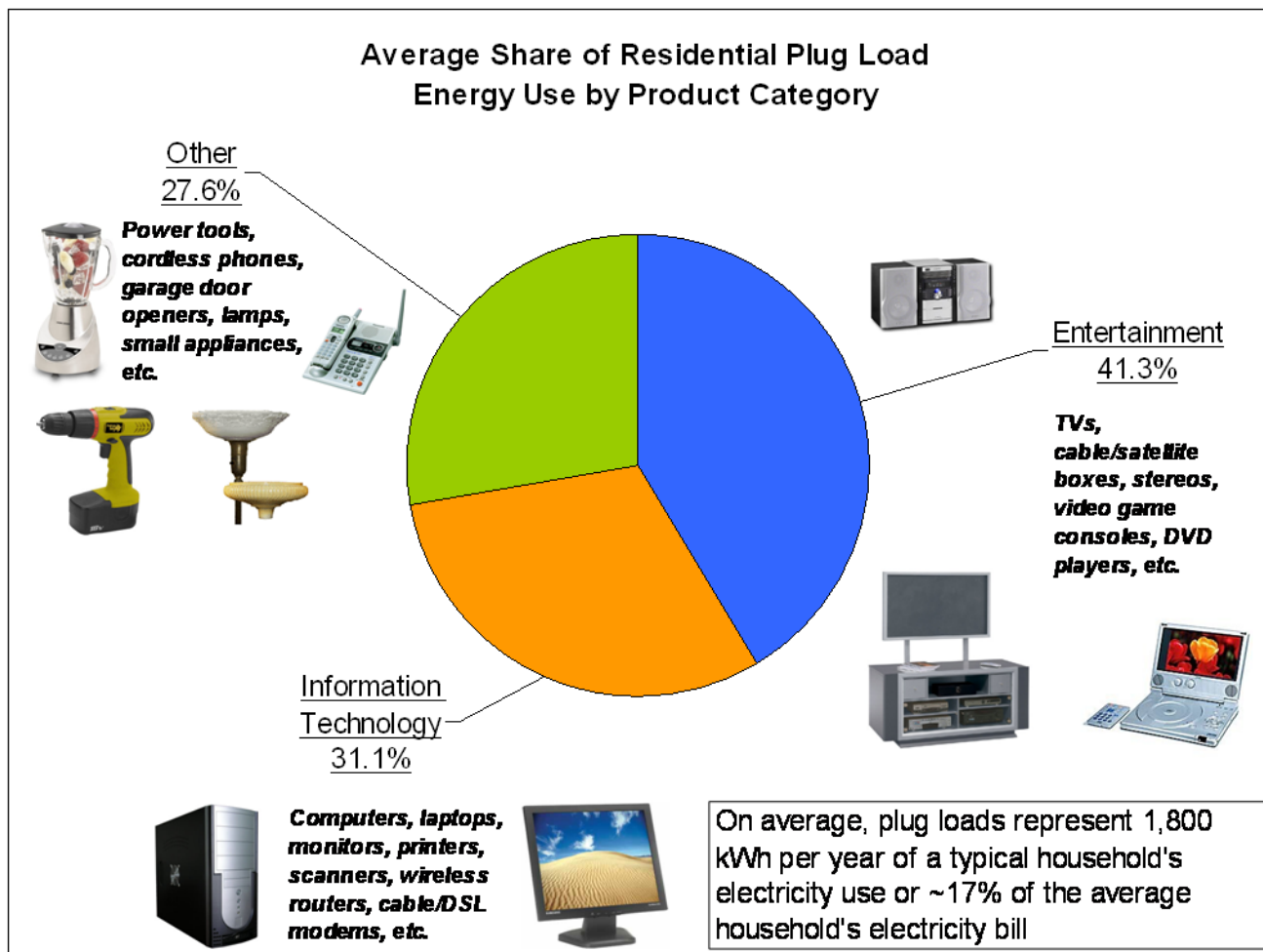
# ZNE & Plug Loads



# ZNE & Plug Loads



**Figure 1. California's Office Electricity Consumption**

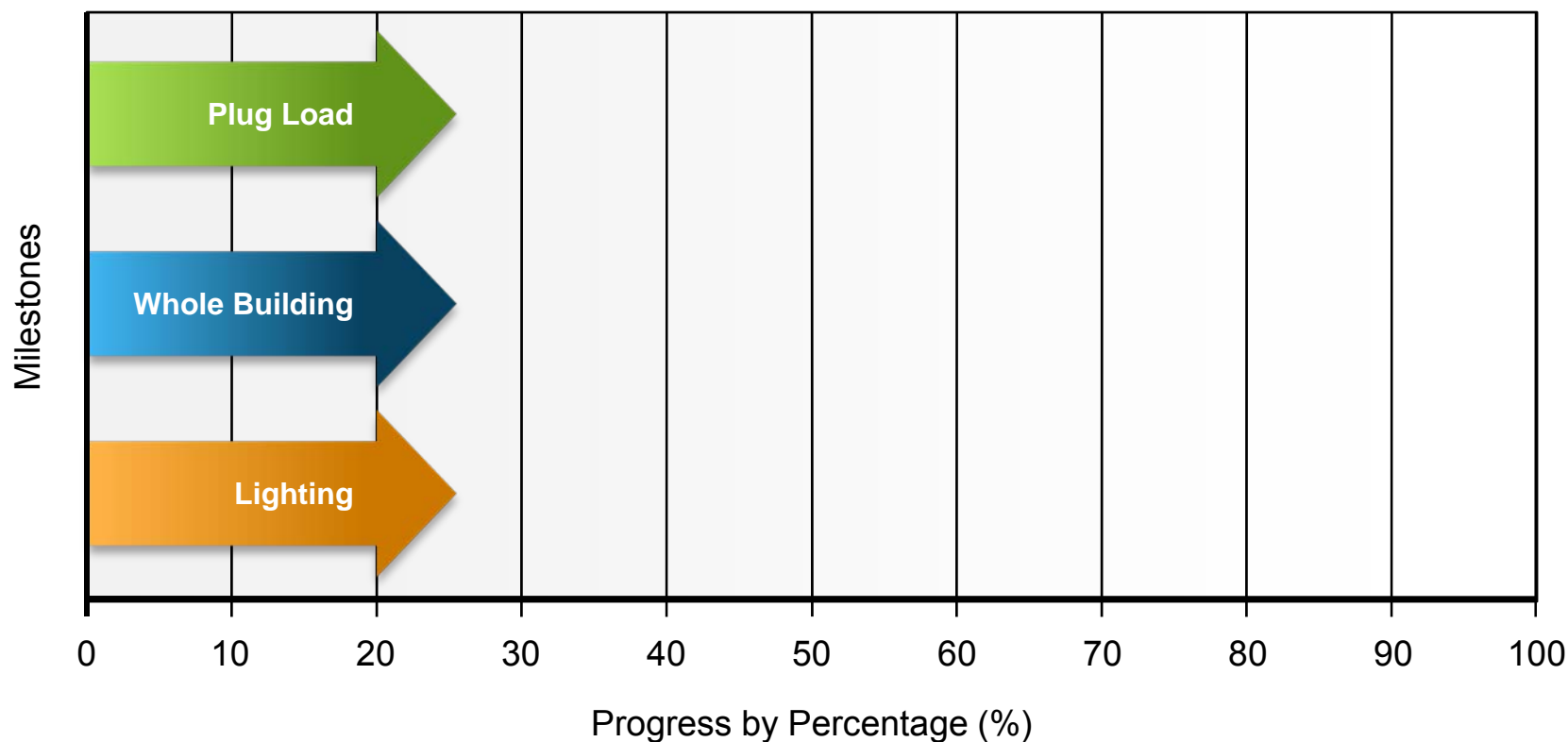


- Strategy 1-2: Expand T20 and T24 to Address All Significant Energy End Uses

Milestone	Champions	Key Actions	Timeline
<b>1-2-1</b> Develop and adopt broader codes and standards for plug loads such as copiers, printers, battery chargers, televisions	David Jacobowitz, Google	Research new plug load efficiency opportunities; review/test costs and performance	Complete
	Brad Meister, CEC	Develop case studies to substantiate costs, savings	Q3 2010
	Ken Rider, CEC	Engage industry stakeholders on relevant changes to T20	Q2 2011
	Harinder Singh, CEC	Propose/adopt changes to Title 20	Q2 2012



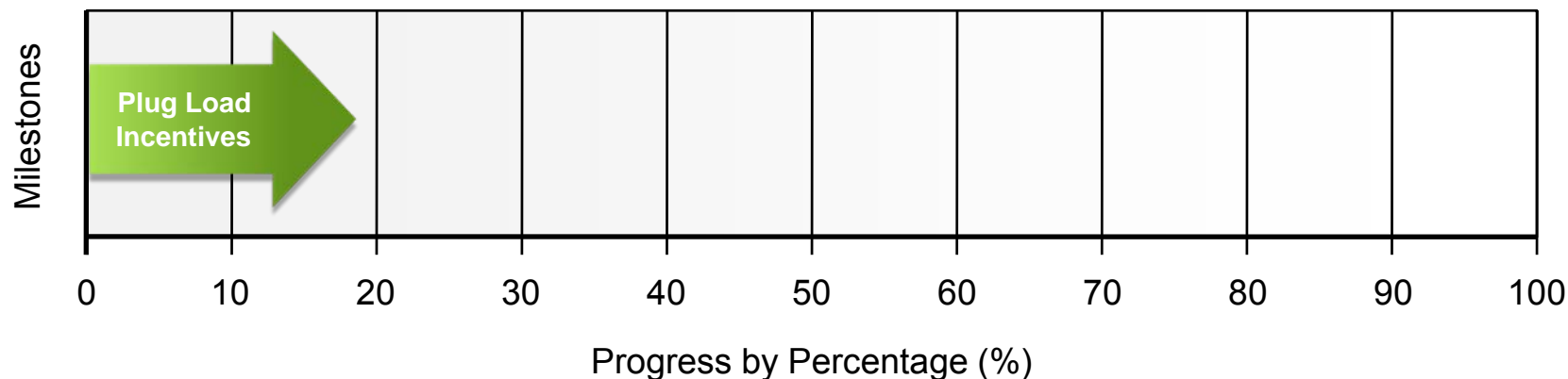
- Strategy 1-2: Expand T20 and T24 to Address All Significant Energy End Uses



- 2-8: Improve Utilization of Plug Load Technologies Within the Commercial Sector

Milestone	Champions	Key Actions	Timeline
<b>2-8-1</b> Test and deploy package of rebates, incentives and voluntary industry agreement to bring significant numbers of the best available technologies for managing plug loads within the commercial sector	David Kaneda, Ideas, Inc.  Rich Lauman, Ecos Consulting	Conduct research into plug load energy impacts	Complete
		Define a set of plug load strategies	Q3 2010
		Conduct pilot efficiency strategies in initial buildings to evaluate effectiveness and user response to plug load efficiencies	Q4 2010
		Review and test additional plug load control strategies	Q4 2010
		Create recommendations for 2013-2015 programs	Q4 2011
		Collaborate with commitment campaign in Strategy 2-1	Q3 2012

- 2-8: Improve Utilization of Plug Load Technologies Within the Commercial Sector



- Aggressive consumer education on the energy use of office electronics
- Promotion of office electronics whose power management features cannot be disabled
- Promotion of highly efficient products and of highly efficient power supplies
- Use of —smart plug strips and other automatic controls
- Consideration of office electronics in Title 20
- Consideration of switched outlets in Title 24

# CA | Energy Efficiency Strategic Plan

## Q&A

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Thank You

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